CLAIMS

1. A method for generating data for transmission from a subscriber unit to a base station, the method comprising:

modulating each of a plurality of channel encoded data with an associated code to produce a plurality of streams of modulated symbols;

combining the plurality of streams of modulated symbols into two combined streams to reduce a peak-to-average ratio of the transmission; and

complex multiplying said two combined streams with a complex pseudonoise code.

2. The method as claimed in claim 1, wherein the modulating each of a plurality of channel encoded data with an associated code comprises:

modulating a pilot channel encoded data with a first code to produce a first stream of modulated symbols; and

modulating a user first channel encoded data with a second code to produce a second stream of modulated symbols.

3. The method as claimed in claim 2, wherein said combining the plurality of streams of modulated symbols comprises:

providing said first stream of modulated symbols separately from said second stream of modulated symbols for said complex multiplying.

4. The method as claimed in claim 2, further comprising:

modulating a user second channel encoded data with a third code to produce a third stream of modulated symbols.

5. The method as claimed in claim 2, wherein said combining the plurality of streams of modulated symbols comprises:

adding the first stream of modulated symbols to the second stream of modulated symbols to provide a first added stream of modulated symbols; and

providing said first added stream separately from the third stream of modulated symbols for said complex multiplying.

6. The method as claimed in claims 2, further comprising:

modulating a control channel encoded data with a fourth code to produce a fourth stream of modulated symbols.

7. The method as claimed in claim 6, wherein said combining the plurality of streams of modulated symbols comprises:

adding the fourth stream of modulated symbols to one of the first and the second stream of modulated symbols to provide a first added stream of modulated symbols; and

providing said first added stream separately from the remaining of the first and the second stream of modulated symbols for said complex multiplying.

8. The method as claimed in claim 4, further comprising:

modulating a control channel encoded data with a fourth code to produce a fourth stream of modulated symbols.

9. The method as claimed in claim 8, wherein said combining the plurality of streams of modulated symbols comprises:

adding the first stream of modulated data to the second stream of modulated symbols to provide a first added stream of modulated symbols; and

adding the fourth stream of modulated data to the third stream of modulated symbols to provide a second added stream of modulated symbols;

providing said first added stream separately from the second addid stream of modulated symbols for said complex multiplying.

10. The method as claimed in claim 1 wherein the complex pseudonoise code comprises an in-phase pseudonoise code component and a quadrature-phase pseudonoise code component.

11. The method as claimed in claim 10 wherein the in-phase pseudonoise code component and the quadrature-phase pseudonoise code component are multiplied by a long code.

12. The method as claimed in claim 1 wherein said complex multiplying comprises:

using a first of the at least one combined streams and an in-phase pseudonoise code component as real parts; and

using a second of the at least one combined streams and a quadrature-phase pseudonoise code component as imaginary parts.

13. The method as claimed in claim 12 wherein said complex multiplying comprises:

multiplying the first combined stream by the in-phase pseudonoise code component to produce a first intermediate signal;

multiplying the second combined stream by the in-phase pseudonoise code component to produce a second intermediate signal;

multiplying the first combined stream by the quadrature-phase pseudonoise code component to produce a third intermediate signal;

multiplying the second combined stream by the quadrature-phase pseudonoise code component to produce a fourth intermediate signal;

subtracting the fourth intermediate signal from the first intermediate signal to produce an in-phase product signal; and

adding the second intermediate signal to the third intermediate signal to produce a quadrature-phase product signal.

14. The method as claimed in claim 1, wherein the plurality of associated codes is Walsh codes.

15. The method as claimed in claim 4, wherein a length of the second code is greater than the length of the third code.

16. The method as claimed in claim 1, further comprising:

adjusting gain of the plurality of streams of modulated symbols.

17. The method as claimed in claim 16, wherein said adjusting gain of the plurality of streams of modulated symbols comprises:

adjusting gain of a first stream of modulated symbols; and

adjusting gains of each of the remaining streams to values determined relative to the gain of the first stream.

18. An apparatus for generating data for transmission from a subscriber unit to a base station, the apparatus comprising:

a plurality of modulators configured to modulate each of a plurality of channel encoded data with an associated code to produce a plurality of streams of modulated symbols;

a combiner, communicatively coupled to said plurality of modulators, configured to combine the plurality of streams of modulated symbols into two combined streams to reduce a peak-to-average ratio of the transmission; and

a complex multiplier, communicatively coupled to said combiner, configured to complex multiply said two combined streams with a complex pseudonoise code.

19. The apparatus as claimed in claim 18, wherein said plurality of modulators comprises:

a first modulator configured to modulate a pilot channel encoded data with a first code to produce a first stream of modulated symbols; and

a second modulator configured to modulate a user first channel encoded data with a second code to produce a second stream of modulated symbols.

20. The apparatus as claimed in claim 19, wherein said combiner comprises:

a first adder configured to provide the first stream of modulated symbols as a first combined stream; and

a second adder configured to provide the second stream of modulated symbols as a second combined stream.

21. The apparatus as claimed in claim 19, wherein said plurality of modulators further comprises:

a third modulator configured to modulate a user second channel encoded data with a third code to produce a third stream of modulated symbols.

22. The apparatus as claimed in claim 19, wherein said combiner comprises:

a first adder configured to add the first stream of modulated symbols to the second stream of modulated symbols to provide a first combined stream; and

a second adder configured to provide said third stream of modulated symbols as a second combined stream.

23. The apparatus as claimed in claims 19, wherein said plurality of modulators further comprises:

a fourth modulator configured to modulate a control channel encoded data with a fourth code to produce a fourth stream of modulated symbols.

24. The apparatus as claimed in claim 23, wherein said combiner comprises:

a first adder configured to add the fourth stream of modulated symbols to the first stream of modulated symbols to provide a first combined stream; and

a second adder configured to add the fourth stream of modulated symbols to the second stream of modulated symbols to provide a second combined stream.

25. The apparatus as claimed in claim 21, wherein said plurality of modulators further comprises:

a fourth modulator configured to modulate a control channel encoded data with a fourth code to produce a fourth stream of modulated symbols.

26. The apparatus as claimed in claim 25, wherein said combiner comprises:

a first adder configured to add the first stream of modulated data to the second stream of modulated to provide a first combined stream; and

a second adder configured to add the fourth stream of modulated data to the third stream of modulated to provide a second combined stream.

27. The apparatus as claimed in claim 18 wherein the complex pseudonoise code comprises an in-phase pseudonoise code component and a quadrature-phase pseudonoise code component.

28. The apparatus as claimed in claim 27 wherein the in-phase pseudonoise code component and the quadrature-phase pseudonoise code component are multiplied by a long code.

29. The apparatus as claimed in claim 18 wherein said complex multiplier is configured to:

using a first of the at least one combined streams and an in-phase pseudonoise code component as real parts; and

using a second of the at least one combined streams and a quadrature-phase pseudonoise code component as imaginary parts.

30. The apparatus as claimed in claim 29 wherein said complex multiplier comprises:

a first multiplier configured to multiply the first combined stream by the in-phase pseudonoise code component to produce a first intermediate signal;

a second multiplier configured to multiply the second combined stream by the in-phase pseudonoise code component to produce a second intermediate signal;

a third multiplier configured to multiply the first combined stream by the quadrature-phase pseudonoise code component to produce a third intermediate signal;

a fourth multiplier configured to multiplying the second combined stream by the quadrature-phase pseudonoise code component to produce a fourth intermediate signal;

a first adder configured to subtract the fourth intermediate signal from the first intermediate signal to produce an in-phase product signal; and

a second adder configured to add the second intermediate signal to the third intermediate signal to produce a quadrature-phase product signal.

31. The apparatus as claimed in claim 18, wherein the plurality of associated codes comprises Walsh codes.

32. The apparatus as claimed in claim 21, wherein a length of the second code is greater than the length of the third code.

33. The apparatus as claimed in claim 18, further comprising:

a plurality of gain adjusters configured to adjusting gain of the plurality of streams of modulated symbols.

34. The apparatus as claimed in claim 16, wherein said plurality of adjusters comprises:

a first adjuster configured to adjust gain of a first stream of modulated symbols; and

a second plurality of adjusters configured to adjust gains of each of the remaining streams to values determined relative to the gain of the first stream.